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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/812,049 | 03/30/2004 | Fuyuki Tawada | 008312-0309004 | 1417 |

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| EXAMINER | |
|---|---|
| SONG, JASMINE | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2188 | |

DATE MAILED: 05/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/812,049 | TAWADA ET AL. | |
| | Examiner | Art Unit | |
| | Jasmine Song | 2188 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *30 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 12* is/are rejected.

7)☒ Claim(s) *2-11 and 13* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *03/30/04&05/21/04*
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## Detailed Action

### Specification

1. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### Drawings

2. The drawings filed on 03/30/04 have been approved by the Examiner.

### Oath/Declaration

3. The applicant's oath/declaration has been reviewed by the examiner and is found to conform to the requirements prescribed in 37 C.F.R. 1.63.

### Information Disclosure Statement

4. The information disclosure statement (IDS) submitted on 03/30/04,05/21/04 and 12/19/05 are in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

## Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoki., US 2001/0010605 A1, in view of Suzuki et al. US 6,061,805.

Regarding claim 1, Aoki teaches that a disk storage apparatus which can concurrently process a plurality of data streams specified by a host (it is taught as recording and reproducing of continuous data such as audio data or video data, section 0047, last three lines), in which a head reads and writes data from and to a disk (Fig.1 and section 0023), the disk storage apparatus comprising:

means for sequentially (section 0036, lines 7-8) executing write commands with time limits provided by the host (section 0034, lines 1-5) and instructing a data stream to be written (section 0036, it also applies to the write command) and read commands (section 0036, line 4) with time limits provided by the host (section 0034, lines 1-5) and instructing a data stream to be read (section 0036) in accordance with a time series (it is taught as a time such as an internal timer for monitoring the read operation time for each sector and starts the execution of command, section 0036, first four lines);

means for detecting that an error has occurred in a write operation specified by any of the write commands (Fig.4, step S4, even it is assumed for a read command, but the same holds for the write command; see section 0045); and

means for controlling the executing means (it is taught as a disk controller HDC has an interface function of controlling the transfer of command and read/write data between the drive and a host system, section 0026), the controlling means operating if the detecting means (section 0026) detects that an error has occurred in the write operation specified by any of the write commands (Fig.4 YES at step S4).

Aoki does not teach causing the executing means to continue the write operation regardless of whether or not a time spent performing the write operation until the present time is within the time limit specified by the write commands if there is an error has been detected. Aoki only teaches that the CPU carries out a retry operation to execute the read or write operation again on the data sector where an error has occurred if the time limit has not been exceeded (section 0039) and the CPU stops reading or writing the relevant data sector and starts to access the beginning of the next data sector if the error has not been corrected within the upper limit time (section 0042).

However, Suzuki teaches continuing the write operation regardless of whether or not a time spent performing the write operation until the present time is within the time limit specified by the write commands (col.2, lines 47-51; col.5, lines 33-42 andcol.6, lines 13-15) if there is a error has been detected (col.5, lines 30-32).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the teachings of Suzuki into Aoki's system such as

continuing the write operation regardless of whether or not a time spent performing the write operation until the present time is within the time limit specified by the write commands because the reliability of error recovery can be increased (see Suzuki, col.2, lines 47-51, col.3, lines 21-28; also see Murai, US 2004/0225710 A1 also teaches a predetermined number of times of retries is performed for the read/write error regardless the time, so that the reliability of the data is guaranteed, section 0055, last four lines).

Accordingly, one of ordinary skill in the art would have recognized this and concluded that they are from the same field of endeavor (both references teaches hard disk drive HDD). This would have motivated one of ordinary skill in the art to implement the above combination for the advantages set forth above.

Regarding claim 12, Aoki teaches that a method of controlling data streams, the method being applied to a disk storage apparatus which can concurrently process a plurality data streams specified by a host (it is taught as recording and reproducing of continuous data such as audio data or video data, section 0047, last three lines), the method comprising:

sequentially (section 0036, lines 7-8) executing write commands with time limits provided by the host (section 0034, lines 1-5) and instructing a data stream to be written (section 0036, it also applies to the write command) and read commands (section 0036, line 4) with time limits provided by the host (section 0034, lines 1-5) and instructing a data stream to be read (section 0036) in accordance with a time series (it is taught as a

time such as an internal timer for monitoring the read operation time for each sector and starts the execution of command, section 0036, first four lines);

detecting that an error has occurred in a write operation specified by any of the write commands (Fig.4, step S4, even it is assumed for a read command, but the same holds for the write command; see section 0045); and

controlling a retry of the write command (section 0039, even it is assumed for a read command, but the same holds for the write command; see section 0045) so that if it is detected that an error has occurred in the write operation specified by any of the write commands (Fig.4 YES at step S4).

Aoki does not teach the retry of the write command is executed regardless of whether or not a time spent performing the write operation until the present time is within the time limit specified by the write commands if there is an error has been detected.

However, Suzuki teaches the retry of the write command is executed regardless of whether or not a time spent performing the write operation until the present time is within the time limit specified by the write commands (col.2, lines 47-51; col.5, lines 33-42 andcol.6, lines 13-15) if there is a error has been detected (col.5, lines 30-32).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the teachings of Suzuki into Aoki's system such as the retry of the write command is executed regardless of whether or not a time spent performing the write operation until the present time is within the time limit specified by the write commands because the reliability of error recovery can be increased (see

Suzuki, col.2, lines 47-51, col.3, lines 21-28; also see Murai, US 2004/0225710 A1 also teaches a predetermined number of times of retries is performed for the read/write error regardless the time, so that the reliability of the data is guaranteed, section 0055, last four lines).

Accordingly, one of ordinary skill in the art would have recognized this and concluded that they are from the same field of endeavor (both references teaches hard disk drive HDD). This would have motivated one of ordinary skill in the art to implement the above combination for the advantages set forth above.

## Allowable Subject Matter

7. Claims 2-11 and 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Aoki teaches determining whether the time spend performing the write operation specified by the write command, until the present time, is within the time limit specified by the write command when the detecting means detects that an error has occurred in the write operation (Fig.4), Aoki and the prior art of record do not teach or suggest means for transferring predefined dummy data to the host, the transferring means operating when the time spent performing the write operation is determined to exceed the time limit and there is a read command writing to be executed, to transfer the dummy data to the host as read data requested by the read command instead of

executing the read command as claimed in claims 2 and 13 in combination with the other elements set forth in the claimed invention. Claims 3-5 are also objected because they are depended on the objected claim 2.

The prior art of record also does not teach or suggest that means for predicting whether execution of the read command with the time limit is completed within the time limit specified by the read command, before the execution of the read command is started, and wherein if the predicting means predicts that the execution of the read command is not completed within the time limit, the controlling means forces completion of the execution of the read command by the executing means as claimed in claim 6 in combination with the other elements set forth in the claimed invention. Claims 7-11 are also objected because they are depended on the objected claim 6.

## Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

| | |
|---|---|
| Igari et al | US 6523142 B1 |
| Hirata et al | US6918054 B2 |
| Iwasaki | US6308007 B1 |

9. When responding to the office action, Applicant is advised to clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the

art disclosed by the references cited or the objections made. He or she must also show how the amendments avoid such references or objections. See 37 C.F.R. 1.111 (c).

10. When responding to the office action, Applicants are advised to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist examiner to locate the appropriate paragraphs.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jasmine Song whose telephone number is 571-272-4213. The examiner can normally be reached on 7:30-5:30 (first Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabhan can be reached on 571-272-4210. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jasmine Song

Patent Examiner

May 23, 2006